

# NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

November 29, 2011

# Precipitation and Snowpack

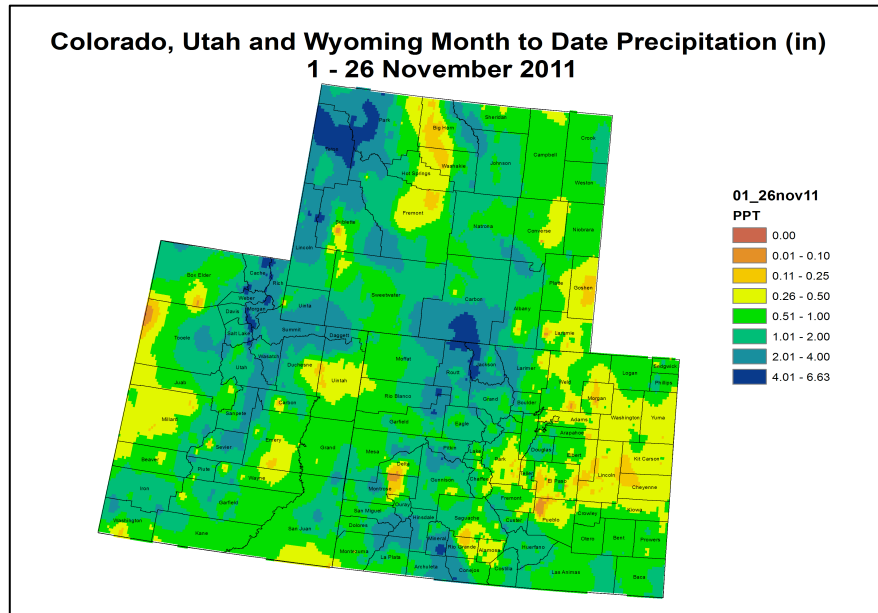


Fig. 1: November month-to-date precipitation in inches.

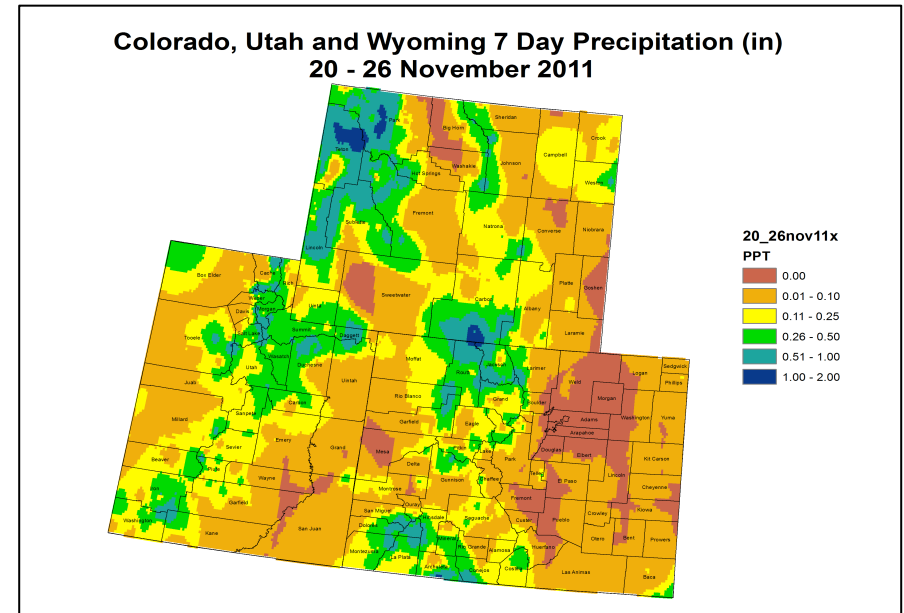


Fig. 2: November 20 – 26 precipitation in inches.

In November so far, generous amounts of precipitation have fallen throughout the Upper Colorado River Basin (UCRB, Fig. 1). The higher elevations across the Upper and Lower Green River basins and in the northern mountains of Colorado have received over 1 inch month-to-date, with many areas seeing between 2 and 4 inches. Parts of Utah just south of the Duchesne River, regions around the Four Corners, the San Luis Valley, and much of the northeast plains of CO have received between a quarter inch and half inch of precipitation month-to-date. The drought stricken southeast CO has received over a half inch to an inch of moisture since the beginning of the month.

Last week, over a quarter inch of precipitation fell in the San Juan mountains in southwest CO, in the northern mountains of CO and along the Wasatch range in UT (Fig. 2). Much of the central portion of the UCRB received less than a tenth of an inch last week. Most of eastern CO received less than a tenth of an inch for the week, with the exception of far southeast Baca County, where D4 is currently located.

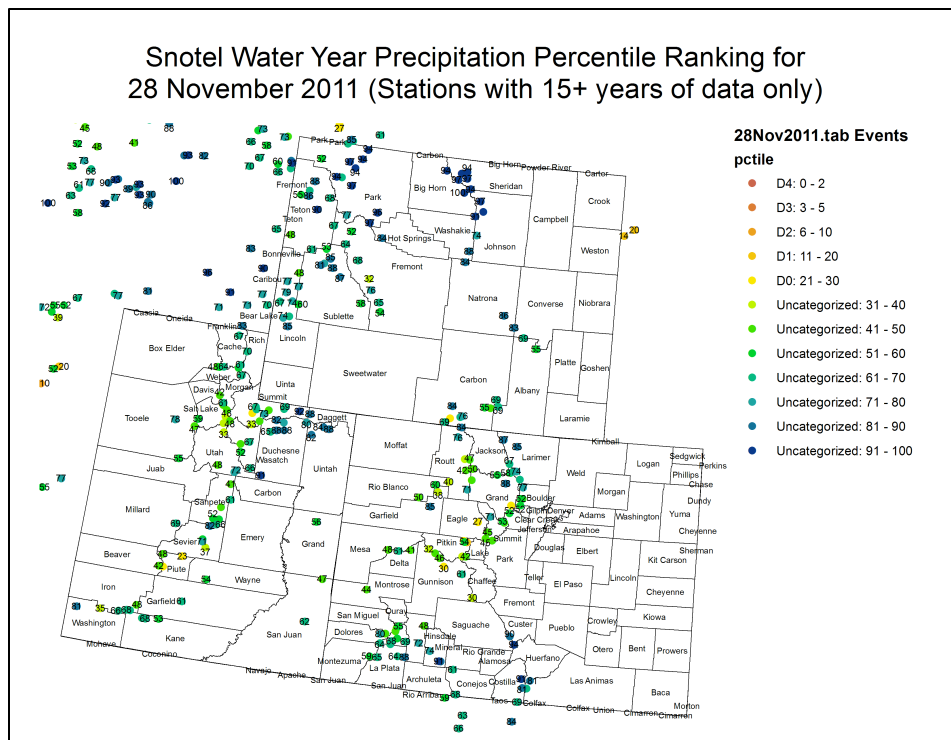


Fig. 3: SNOTEL WYTD precipitation percentiles (50% is median, 21 – 30% is Drought Monitor’s D0 category).

Water-year-to-date (WYTD), SNOTEL precipitation percentiles are in the near to above average range throughout most of the UCRB (Fig. 3). SNOTEL sites in the Upper Green River basin and in the northern and central mountains of CO range from around the 50<sup>th</sup> to the 80<sup>th</sup> percentiles. The southern mountains of CO and the mountains in northeast UT have already seen excellent precipitation accumulations WYTD, with many sites currently near or above the 90<sup>th</sup> percentile. The lowest percentiles (between the 30<sup>th</sup> and 50<sup>th</sup> percentiles) are being seen in the Gunnison River basin.

In the Gunnison basin in western CO, snow water equivalent was tracking near average for most of the WYTD, but over the past week has been tracking slightly below average (Fig. 4). Though figure 3 shows lower percentiles in the basin, there is not much difference between the driest year and an average year this early in the accumulation part of the season (as seen in Fig. 4).

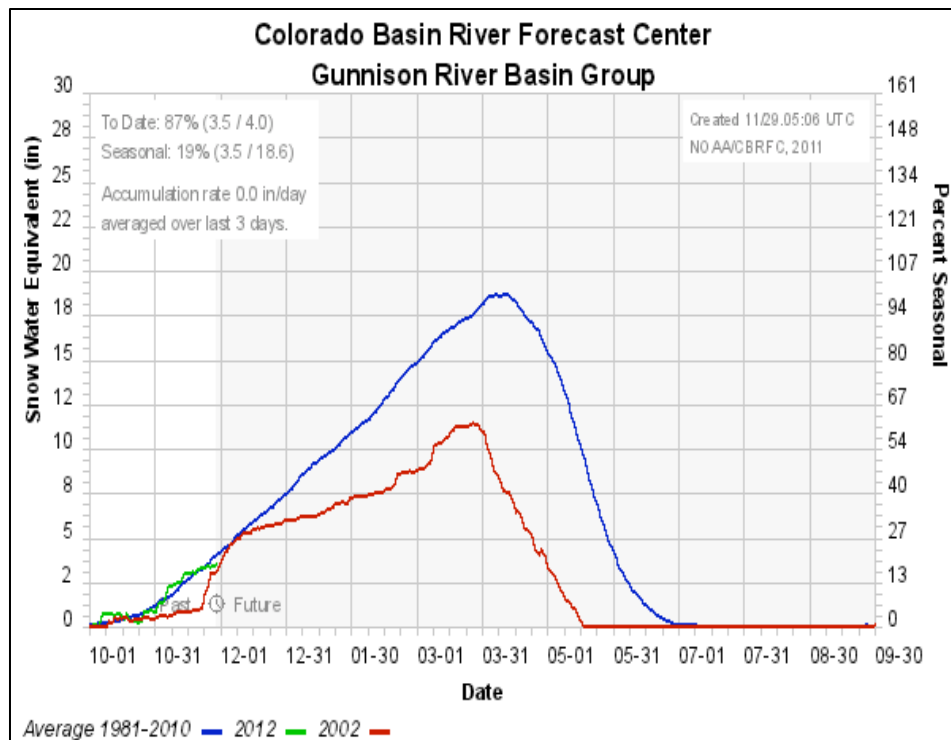
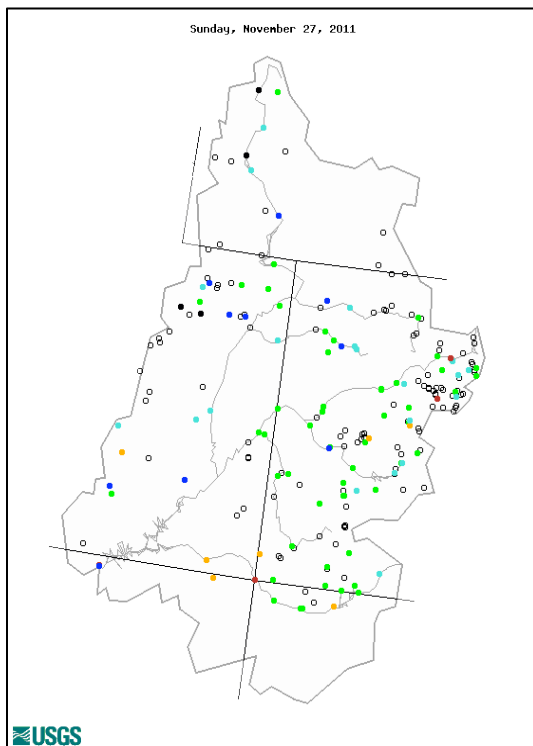


Fig. 4: Gunnison basin WYTD snow water equivalent accumulation (green line) compared to the average (blue).

# Streamflow

As of November 27<sup>th</sup>, 88% of the USGS streamgages in the UCRB recorded normal (25<sup>th</sup> – 75<sup>th</sup> percentile) or above normal 7-day average streamflows (Fig. 5). About 14% of the gages in the basin are recording much above normal flows, while 11% of the gages in the basin are recording below normal flows. Most of the gages recording below normal flows are located in the southern part of the basin (in the San Juan basin). Higher flows are currently being observed in the Upper and Lower Green River basins in WY and UT.

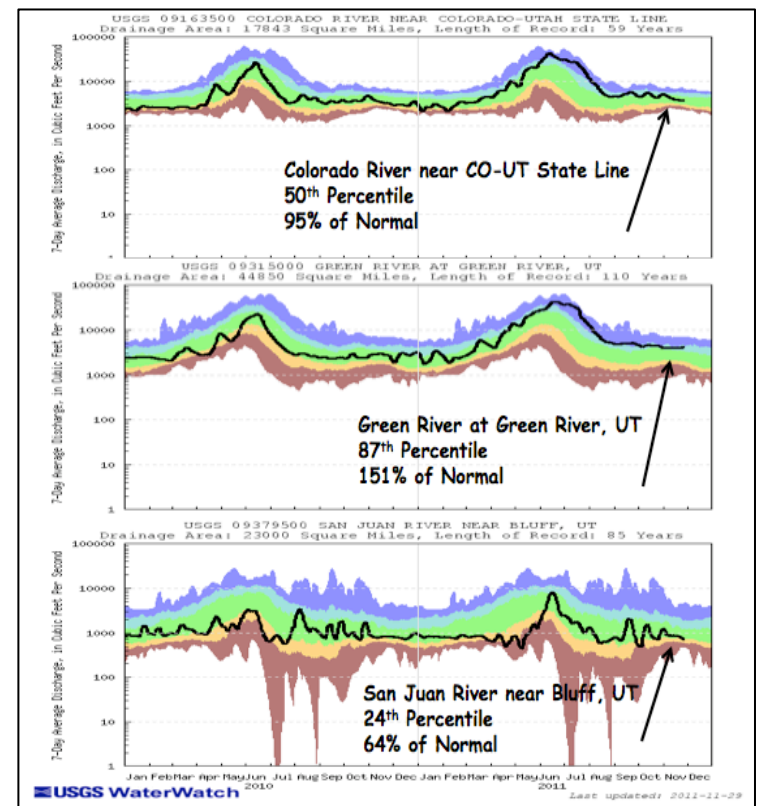
The gage on the Colorado River near the CO-UT state line is currently recording near normal flows at the 50<sup>th</sup> percentile (Fig. 6). The Green River gage at Green River, UT is reporting above normal flows at the 87<sup>th</sup> percentile. The San Juan River gage near Bluff, UT is reporting that flows have just dipped below normal and is now at the 24<sup>th</sup> percentile.



Explanation - Percentile classes							
<span style="color: red;">●</span>	<span style="color: red;">●</span>	<span style="color: orange;">●</span>	<span style="color: green;">●</span>	<span style="color: cyan;">●</span>	<span style="color: blue;">●</span>	<span style="color: black;">●</span>	<span style="color: gray;">●</span>
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Fig. 5: 7-day average discharge compared to historical discharge for November 27<sup>th</sup>.

Fig. 6: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).



# Water Supply and Demand

Last week, much of the UCRB saw above average temperatures, with below average temperatures over the Upper Green River basin. Much warmer than average temperatures were observed along the Front Range and in eastern CO. The VIC model continues to show dry soil moisture conditions in southeast CO (Fig. 7). Dry soil conditions are showing up in UT around the Colorado River valley and have again deteriorated in Sweetwater County, WY. Wet soils can be seen in the northern CO mountains and eastward.

All of the major reservoirs above Lake Powell are near or above their November averages. Dillon, Green Mountain, Granby, and Lake Powell have all seen 2% or greater drops in levels this month. Flaming Gorge and Blue Mesa Reservoirs have only slightly decreased, while Navajo has stayed at a nearly steady level for the month. Lake Powell is currently at 87% of average and 69% of capacity, compared to 61% of capacity one year ago.

## Precipitation Forecast

The UCRB will experience one more day of mild conditions before the next big change in weather arrives mid-week. High pressure over the southwest US will gradually break down as a low pressure system begins to develop over the Great Basin on Wednesday. The position of this storm appears to favor the southern portion of the UCRB while significant precipitation totals in northern areas will be less widespread (Fig. 8). While precipitation associated with this event will be persistent, the lack of a good moisture source should keep snowfall amounts on the light to moderate side. Expect amounts of 0.75 to 1.00 inches of liquid for the mountains of southwest Colorado and southern Utah with valley locations and the Four Corners region picking up around 0.5 inches of liquid by Saturday. Areas north of the Grand Valley can expect liquid accumulations around 0.5 inches through Saturday, with isolated amounts of 0.75 inches confined to the higher terrain of northern CO and western WY. Unsettled conditions will persist through the weekend as the upper level disturbance lingers over the Great Basin. A reinforcing shot of Arctic air will arrive in the UCRB on Monday, providing support for continuing light snow showers with accumulating snowfall again possible for mountain locales.

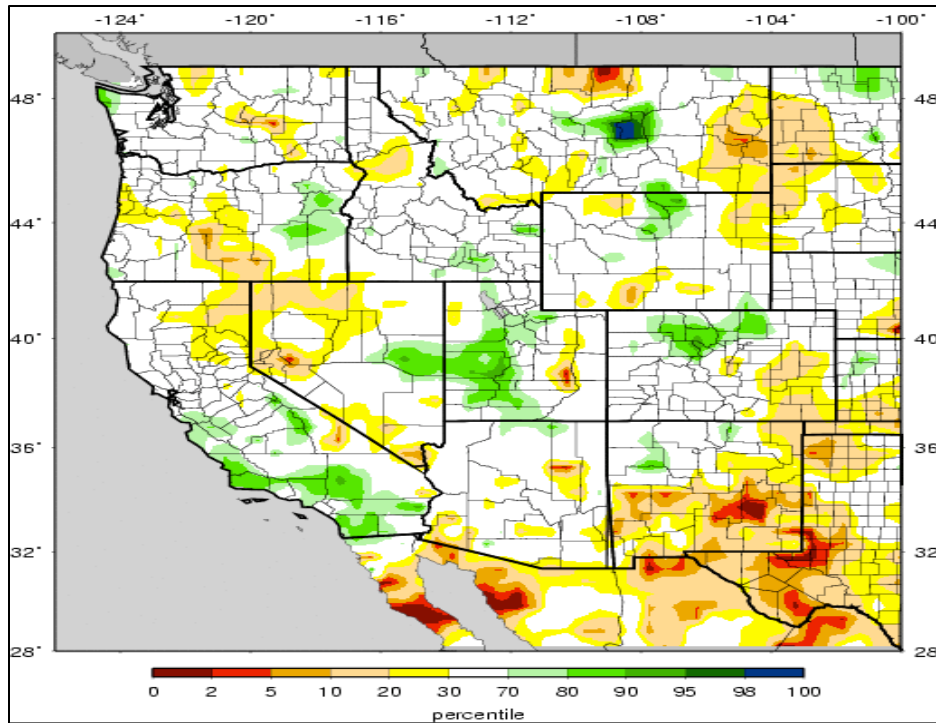


Fig. 7: VIC soil moisture percentiles as of November 27<sup>th</sup>.

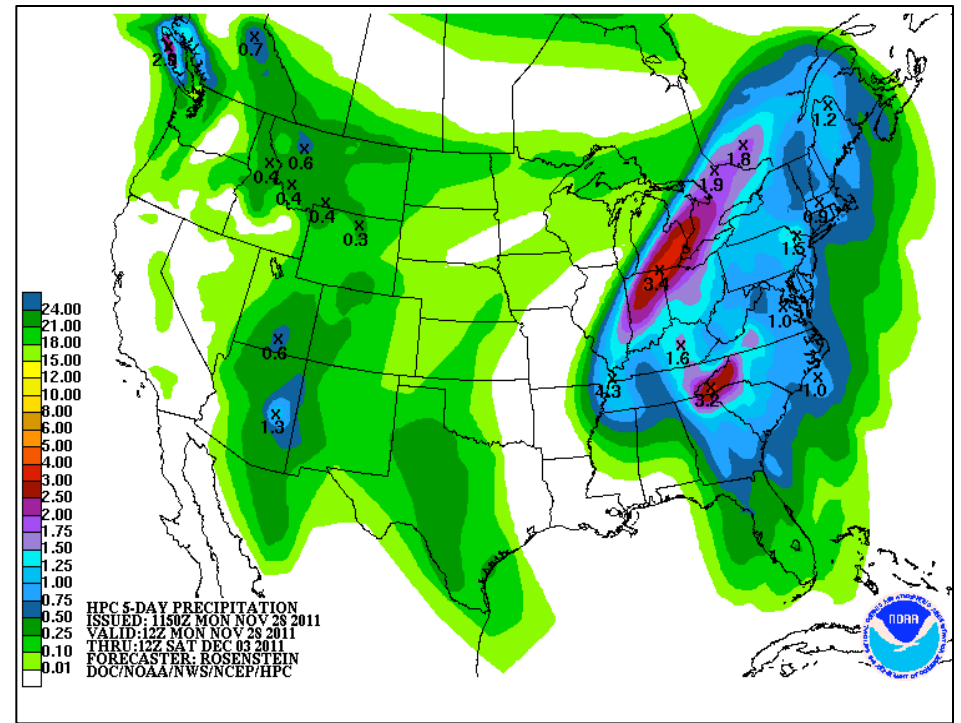


Fig. 8: HPC Quantitative Precipitation Forecast (QPF) through 12Z Saturday.



### Drought categories and their associated percentiles

Status quo is recommended for the UCRB in the most current depiction of the U.S. Drought Monitor (USDM) map (Fig. 9). A slight improvement is recommended for Baca County in southeast CO (Fig. 9, black line), where recent relief has been observed in a very localized area. The northern extent of the D4 line should now extend more due east (instead of on a northeast trajectory), and then recurve at the Kansas border. Though some precipitation did fall in far southeast Baca County this past week, conditions have not improved enough to completely remove the D4 at this time. Dry conditions were seen across the rest of southeast CO and in the San Luis Valley last week, so no additional improvements are needed and status quo is recommended for the rest of CO.